GRINDSTONE CREEK BRIDGE
spanning Grindstone Creek on CART Road No. 458
Cameron Vicinity
DeKalb County
Missouri

HAER No. MO-74

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Department of the Interior
Denver, Colorado 80225-0287

HISTORIC AMERICAN ENGINEERING RECORD

HAER No. MO-74

HAER MO 32-CAM.V, 1-

GRINSTONE CREEK BRIDGE

Location:	The Grindstone Creek Bridge is located 4 1/2 miles northwest of Cameron, Missouri (2 miles west of EE on Cart Road No. 458). It spans Grindstone Creek and is situated between sections 28 and 33 of Township 58 North, Range 30 West.
Quad:	Fordham Quadrangle; 7 1/2 Minutes
UTM:	21/390840/4408040
Date of Construction:	1891; modifications 1987
Present Owner:	DeKalb County Maysville, Missouri 64469
Present Use:	The Grindstone Creek Bridge carries vehicular and pedestrian traffic.
Significance:	The Grindstone Creek Bridge, a Pratt through truss bridge dating 1891, is one of a few extant bridges of this type constructed before the turn of the century. Retaining a high degree of integrity, this structure is also important for its laced upper chords and end posts---a somewhat unusual configuration. The bridge was constructed by E. L. Dildine, Cameron, Missouri.
Historian:	Cydney E. Millstein, M. A. Art History; Linda F. Becker, M. A. Art History, 1993

The History of the Grindstone Creek Bridge

The Grindstone Creek Bridge, located in DeKalb County, Missouri, is one of the few surviving structures from the town of Gridley, Missouri. Founded in 1898 as a railroad station, stock-yards and shipping point on the Kansas City and Northern Connecting Railroad,[1] Gridley was actually known as a trading post for over fifty years. The land on which the town was formed was originally owned by Hugh Swords. Swords, who built the two-story brick Gridley General Store ca. 1898, deeded the right-of-way to the railroad in 1897. Soon after the railroad was completed, a post office was established in the Gridley Store. Through the years, the Gridley Store not only stood as a meeting place for the local farm families but also was the location, on occasion, for the Justice of the Peace Court for Grand River Township.[2]

In 1905 when the railroad moved its station and stockyards from Gridley to a new town named Fordham, construction and establishment of any business and/or residence seemed to come to a standstill. Yet despite the loss of the railroad, the town of Gridley survived for fifty-four years until the railroad was finally abandoned in 1939.[3] The two-story brick shell of the Gridley Store and the Grindstone Creek Bridge are all that remain of the original town.

Local accounts all but ignore the history of the Grindstone Creek Bridge, its designer and manufacturer and what information does exist is, at best, piecemeal.[4] According to the records of the DeKalb County Courthouse, the County contracted with Ernest L.

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[1]The Kansas City and Northern Connecting Railroad later became the Quincy, Omaha and Kansas City Railroad.

[2]Lora R. Lockhart and staff, ed. On the Grand River Trail Clinton and DeKalb Counties, Missouri 1833-1979. (DeKalb County: The DeKalb County Historical Society: 1979), 50-51.

[3]Ibid, 51.

[4]Documentation of the bridge is minimal, presumably because the bridge was built in a rural location by a relatively unknown bridge company. Neither the ASCE Transactions, Engineering Index, nor Industrial Arts Index, etc., contain any information regarding the bridge or its designer(s). In

Dildine, Cameron, Missouri for an iron bridge across Grindstone Creek on February 2, 1891 for $1595.00.[5] Construction of the bridge, which is located east of the Gridley Store, was complete in 1892.[6] For more than one hundred years the bridge has carried both horse-drawn wagons, automobiles and pedestrian traffic.

The actual design and construction of the Grindstone Creek Bridge, in all probability, was carried out by Ernest Leslie Dildine (1858-1928), president and general manager of the Dildine Bridge and Construction Company.[7] His brother, James Chauncey Dildine (1867-1929), was also responsible for its production.[8] Originally established as the John Dildine Company, the bridge-making firm was formed in 1875 in Maysville, Missouri by their father, John Dildine (1833-1918).[9]

Ernest Leslie Dildine, a native of Summerville, South Norwich, Canada, was born on May 7, 1858; J. Chauncey Dildine was born at Dryden, LaPere County, Michigan, January 18, 1867. Both brothers moved to DeKalb County, Missouri with their parents from Michigan in the mid-1870s and subsequently settled in Cameron, Clinton County, Missouri where they continued to operate the bridge-building company.[10]

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addition, it appears that local newspapers (DeKalb County Herald and Maysville Pilot) did not dedicate any copy to the bridge.

[5]DeKalb County Court Record No. 4, February 2, 1891, 1. Maysville, Missouri.

[6]DeKalb County Court Record No. 4, February 4, 1892, 110. E. L. Dildine also constructed an additional bridge across Grindstone Creek between Sections 21 and 28, Township 58, Range 30 during that same period. Although records indicate that Dildine filed plans and specifications of both bridges with the County, it appears that none of these documents exist.

[7]E. L. Dildine became affiliated with the John Dildine Bridge Company in 1885. See The Maysville Pilot, October 30, 1918, 4.

[8]Obituary, J. Chauncey Dildine. The DeKalb County Herald, December 19, 1929. Files, DeKalb County Historical Society, Maysville, Missouri.

[9]Obituary, John Dildine. Maysville Pilot, October 30, 1918, 4; The DeKalb County Herald, December 19, 1929. Files, DeKalb County Historical Society, Maysville, Missouri. John Dildine retired from bridge building in 1897.

[10]DeKalb County Herald, October 18, 1928 and December 19, 1929. Besides E. L. and James Chauncey, John and Hannah Lee Drydale Dildine also had six other children.

After attending public schools, it has been reported that J. Chauncey worked in the machine shop of Stupp Brothers, St. Louis, Missouri in 1882 at the age of 15[11] and then studied for four years (until 1886) under John Giler, city engineer of St. Louis.[12] The circumstances which led Chauncey, as he was called, to work in St. Louis at such a young age has not been revealed, but there is some indication that he, indeed, may have lived in St. Louis for a short time. There is a slice of evidence that a relationship was formed with Stupp Brothers as this company was associated with the Dildine family with regard to the construction of at least one bridge in DeKalb County.[13]

Ernest Leslie Dildine, who taught school for a short time in Dallas Township, became manager of the Dildine Bridge and Construction Company in 1885---twelve years before his father retired from the business. Working with his brother Chauncey, E. L. (better known as Leslie) designed and constructed the majority of the bridges located in Dallas and DeKalb Counties, Missouri.[14]

In 1911, Chauncey and E. L. moved to Hannibal, Missouri and formed the Dildine Bridge and Iron Company.[15] After two years,

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[11]Carrie Polk Johnston and W. H. S. McGlumphy. History of Clinton and Caldwell Counties, Missouri. (Topeka and Indianapolis: Historical Publishing Company, 1923), 382. Stupp Brothers, a nationally-known bridge and iron company, was founded in 1856 as the South Saint Louis Iron Works by German-born John Stupp. See William Barnaby Faherty. The Saint Louis Portrait. (St. Louis: Continental Heritage, Inc., 1978), 231.

[12]History of Clinton and Caldwell Counties, Missouri, 382. No information regarding John Giler and his association with Dildine has been found. With the exception of an 1892 publication, J. C. Dildine does not appear in any St. Louis city directory.

[13]Check stub, November 5, 1889, DeKalb County Courthouse, Maysville, Missouri. On that date a check was made out to Stupp Brothers "for building bridges delivered to E. L. Dildine, Cont. Agent."

[14]The DeKalb County Court Records that were examined indicate there were dozens of bridges built throughout DeKalb and Dallas Counties.

[15]J. Hurley Hagood and Roberta Hagood. The Story of Hannibal. (Hannibal, Missouri: Standard Printing Company, 1976), 132. See also Hannibal City Directories, 1911-1931. It is not known if this company was a subsidiary of the Dildine Bridge and Construction Company, Cameron, Missouri.

Chauncey returned to Cameron[16] to continue operating the business his father began, while E. L., his wife Nannie and later his son Ralph managed the company in Hannibal.[17] The Dildine Bridge and Iron Company remained in Hannibal until the early 1930s.[18] The operation was permanently closed after the death of E. L.

In addition to managing two thriving and respectable companies, both E. L. and Chauncey Dildine received patents for at least two bridge designs. In 1903, the Dildines filed for a patent for their design for their invention known as the "triangular-truss" principle. The invention is the "production of an improved bridge of this character which by reason of its extreme simplicity of structure possesses relatively great strength and durability and may be constructed at a comparatively very low cost from standard structural shapes."[19] The patent for this invention was granted in April, 1904.

A second patent was granted to James C. Dildine in 1914 for a bridge floor invention. Dildine's method of forming a relatively long and wide block or slab for bridge floors consisted of forming a cylindrical skeleton by wires spirally and continuously wound on a reel.[20] Like the above named patent, it is not known as to what specific structure(s) this invention was applied.

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[16]The DeKalb County Herald, December 19, 1929.

[17]Hannibal, Missouri City Directories, 1911-1935.

[18]Ibid.

[19]Patent No. 757,804. Specifications and Drawings of Patents issued from the United States Patent Office for April, 1904. Vol. 383. (Washington: Government Printing Office, 1904), 3196-3198.

[20]Patent No. 1,104,880. Official Gazette of the United States Patent Office. Vol. CCIV, July, 1914. 1059.

Description of the Grindstone Creek Bridge

The Grindstone Creek Bridge (No. 458001.6) is a pin-connected, five-panel Pratt through truss, steel structure. It is comprised of a single 20' approach span with steel stringers on the west; a single 83'-9" steel pinned connection through truss main span and a single 8'-0" approach span with steel stringers on the east. The bridge is supported by concrete-filled steel cylinder piers. The vertical clearance over the deck is 13'-7". Bridge width from curb-to-curb is 13'-6"; deck width out-to-out measures fifteen 15'-5". Horizontal clearance measures 13'-6". The overall length of the structure measures 112'. The bridge is one lane wide and there are no sidewalks or median.[21]

The truss members are comprised as follows: upper chord and inclined end post, two channels with lacing, both sides; lower chord, two rectangular eyebars; vertical, two channels with lacing (two looped eyebars at the hip); diagonal, two rectangular eyebars; counter, square eyebar with turnbuckle; lateral bracing looped round bar with turnbuckle; strut, four angles with lacing. Each truss panel measures sixteen 16'-9". Fishtail, plate girder floor beams support I-beam stringers, which in turn carry a wood plank deck. The original name plates, symmetrically-placed at the top of each portal strut, are extinct.[22]

The overall condition of the bridge is reported to be fairly good, while there is some corrosion of steel truss members and floor system and deterioration of wooden deck. The deck geometry is too narrow and portions of the wood planks are missing. Both reinforced concrete abutments and steel cylinder piers are in fairly good condition. The safe load capacity of the bridge is five tons.[23]

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[21]Missouri Highway and Transportation Department. Bridge No. 458001.6. Structure Inventory and Appraisal Sheet. January 1, 1990. Copy.

[22]**Fraser**design. "Grindstone Creek Bridge DeKalb County Structure No. 458001.6." Inventory dated 29 August 1991. Copy.

[23]Boyd Brown Stude & Cambern. "Inspection Report Bridge No. 458001.6." c. 1980s. Copy.

Minor modifications were made to the bridge ca. 1987. These changes include: additional stringers were added to the floor system; the supports at the four corner of the truss were reinforced.

Significance

The Grindstone Creek Bridge, located in DeKalb County, is one of the few remaining nineteenth century pin-connected Pratt through truss bridges in the state of Missouri. According to a recent survey of Missouri's bridges, there were "thousands" of these structures constructed from 1870 through 1910 throughout the state and "several hundred of these structures remain in use today".[24]

"The Pratt truss achieved enormous popularity", states Donald Jackson in his book Great American Bridges and Dams, "because of its strength and straight forward design. It was not a complicated structure that required complex shop work and it was adaptable to a wide variety of situations."[25] Because of the fundamental character of its design, the all-metal Pratt truss appeared throughout America during the late nineteenth century.[26]

What is unusual about the Grindstone Creek Bridge is that it is one of the few extant bridges of this type that was constructed prior to the twentieth century. "The Grindstone Creek Bridge stands out among Missouri's pin-connected trusses as an early, well-documented example that has retained a high degree of structural integrity."[27] Furthermore, the truss design featuring laced upper chords and end posts is an unusual configuration and the "Grindstone Creek Bridge is the earliest dateable example of these."[28] The age of the structure combined with its unique truss detailing qualifies this bridge for National Register eligibility under Criteron C for its

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[24]Preservation News. Vol. 1, No. 6. November-December, 1991, 1.

[25]Donald C. Jackson. Great American Bridges and Dams. (Washington: The Preservation Press, 1988), 24.

[26]Ibid.

[27]Fraserdesign. Grindstone Creek Bridge DeKalb County Structure No. 458001.6. Inventory Form dated 29 August 1991, 3.

[28]Ibid.

embodiment of the distinctive characteristics of a type, period or method of construction.

Project Statement

This Historic American Engineering Record (HAER) recording project is part of a long term program to document historically significant engineering sites in the United States. The Federal Highway Administration (FHWA) was the Federal agency for this project. The project was conducted in accordance with the Memorandum of Agreement (MOA) between the FHWA and the State Historic Preservation Office (SHPO), Jefferson City, Missouri. The MOA was also accepted by the Advisory Council on Historic Preservation and the DeKalb County commissioners.

The MOA required HAER recordation because of adverse effects. Historical research was conducted by Cydney E. Millstein, Architectural and Art Historical Research, Kansas City, Missouri in association with Linda F. Becker. Archival photography was by Prof. John W. Gutowski, Kansas City.

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